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## A Survey of the Forms of Tuberculosis Encountered at Harare Hospital, Rhodesia, 1967-1969

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It was decided to study the frequency with which tuberculosis was diagnosed in Africans admitted to the Harare Central Hospital in Salisbury, Rhodesia. We also wanted to learn how often this diagnosis was proven at the time of discharge of the patient, since we had reason to believe that tuberculosis was not an easy condition to prove in every case.

Harare Hospital has 1 000 beds; it serves the African population of Salisbury as its community hospital but it also acts as a reference hospital for the greater part of Rhodesia and is at present the University Teaching Hospital.

During the three-year period 1967-1969 this hospital admitted 51 589 patients of whom 1 052 were classified as suffering from tuberculosis. By classified we mean that tuberculosis was the final diagnosis entered by the medical records department on discharge or death.

It is proposed in this paper to analyse the diagnosis of tuberculosis, to determine to what extent the diagnosis was proven and to discuss in somewhat greater detail some of the forms of tuberculosis seen in this hospital.

First the criteria for diagnosis must be established. Despite the advances of technique even in the most sophisticated countries, the diagnosis in many cases must be assumed, as bacteriological or histological proof is either impossible or the clinician must treat the case as that of tuberculosis and rely entirely on clinical and therapeutic tests.

We have the following categories:

(a) *A proven case*: the criteria for proven cases of tuberculosis were where the acid and alcohol fast bacillus was found in a secretion, biopsy specimen, or if histological studies, either during life or at autopsy were characteristic of tuberculosis.

(b) *An assumed case*: was where tuberculosis was proven in one organ and assumed in other organs, if there were lesions in them.

(c) *The probable case*: was one who was referred from other hospitals with a report that tuberculosis had been proven by the presence of bacilli or a characteristic histological picture but for some reason or other the relevant document was lost.

(d) *Accepted case*: was one in whom it was impossible to prove clinically or histologically but had the clinical radiological and many other characteristics of tuberculosis. Examples of this group would be some lung cases, tuberculosis, tuberculosis meningitis and pleurisy.

(e) *An unproven case*: was one who had none of the features mentioned above.

### RESULTS

#### *Prevalence.*

Cases classified at Harare Hospital as tuberculosis during the period 1967-1969 accounted for 2 per cent. of all admissions (1 052 cases in 51 589 patients) and 0.77 per cent of all admissions were proven tuberculosis. Breaking this down according to the above mentioned groups, the position is as follows:

*1 052 cases classified as having tuberculosis during 1967-1969 fell into the following categories.*

Proven	400	38 per cent.
Probable	32	3 per cent.
Accepted	55	5 per cent.
Unproven	565	54 per cent.

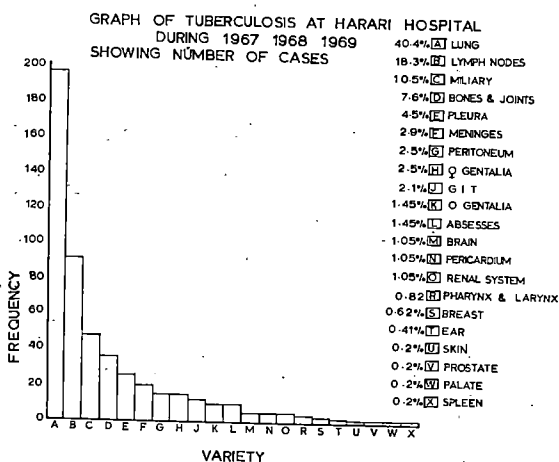
Our figures cannot depict the picture of tuberculosis in Rhodesia as a whole. This is particularly so in the cases of open pulmonary tuberculosis where diagnosis is relatively easily established in outstations and outpatients departments of larger hospitals; these cases are diverted to the various

tuberculosis hospitals without admission to the wards. Nevertheless a number of open cases were recognised when admitted for investigation for other complaints.

### ORGANS INVOLVED

Of the proven cases 204 were extrapulmonary, 154 were pulmonary and 42 had lung plus other lesions. This illustrates the point mentioned in the previous paragraph that our figures are biased against open pulmonary tuberculosis. Figure 1 shows the frequency with which the different organs were involved.

FIG. I



### LUNGS

534 cases were classified as having pulmonary tuberculosis. There were 196 proven cases and 19 probable cases.

*The pulmonary cases:* 42 were cases of primary tuberculosis; these were not proven according to our definition as biopsy would have been hazardous. There were no deaths in this group.

### Post Primary. (Adult Form).

There were 492 classified cases; 196 of these were proven. One was seen in association with a tuberculous perianal abscess; there were 19 probable cases. Thereafter in 277 cases there was no bacteriological evidence upon which to make a diagnosis of pulmonary tuberculosis.

In Table I the cases of pulmonary tuberculosis are summarised.

Table I

Category of 534 Cases — Classified as Pulmonary T.B.

Classified Cases: 534	Primary Cases: 42	Post Primary 492
Proven 196 (36,8%)	0	196 (40,0%)
Probable 19 (3,5%)	0	19 (3,8%)
Accepted 42 (7,9%)	42	0
Unproven 277 (51,8%)	0	277 (56,2%)

### LYMPHADENITIS

Lymphadenopathy was recorded as being present in 259 of the 400 proven cases of tuberculosis. However in 87 there was no mention of lymph nodes in the case records and therefore the presence of lymph nodes was probably more than the stated 259. Of the 133 cases in whom the diagnosis was tuberculosis lymphadenopathy 85 were proven; 9 were probable cases (A).

Table II.

Lymph nodes enlarged in 400 proven Cases of Tuberculosis.

Cervical only	112
Cervical and axillary	30
Cervical and inguinal region	24
Cervical, axillary and inguinal region	18
Inguinal region only	16
Axillary region only	13
Axilla and inguinal region	10
Generalised	15
Others	10
Cervical and "Others"	7
Axillary and "Others"	4

By "Others" is meant epitrochlear, hilar, mesenteric and tonsillar lymph nodes.

These findings warrant comment. The cervical region is still the commonest site for the lymphadenopathy. Out of 259 cases 112 were only in the neck. Many of these, of course, were extensions from a primary lesion and this will be discussed in a subsequent section. These accounted for 42 per cent. of cases of all lymphadenopathies. The noteworthy feature is multiple or generalised glandular involvement. Davies (1947) was struck by the figures with which the generalised forms of tuberculosis occurred in his series. In our African context this has already been described (Gelfand, 1962). The practical implication is obvious. One is taught to regard generalised lymphadenopathies as manifestations of disease of the reticulo-endothelial system and therefore with a gloomy and sinister prognosis. In our

experience we have been pleasantly surprised to find the disease to be a curable infection.

Table III

Category of 133 Cases classified as Tuberculosis of the Lymph Nodes.

Classified	133
Proven	89 (67,00%)
Probable	9 (6,75%)
Unproven	35 (35,00%)

The 259 cases of lymphadenopathy recorded were found on routine examination of positive tuberculosis patients. In 133 cases, tuberculosis of the lymph nodes was thought to be the probable cause of the lymphadenopathy. The 126 others had a slight lymphadenopathy only (not considered tuberculous).

#### MILIARY TUBERCULOSIS

81 cases were classified as having miliary tuberculosis. 51 were proven by the following procedures:

Table IV.

The Manner in which the Diagnosis of 51 Cases of Miliary Tuberculosis was proven.

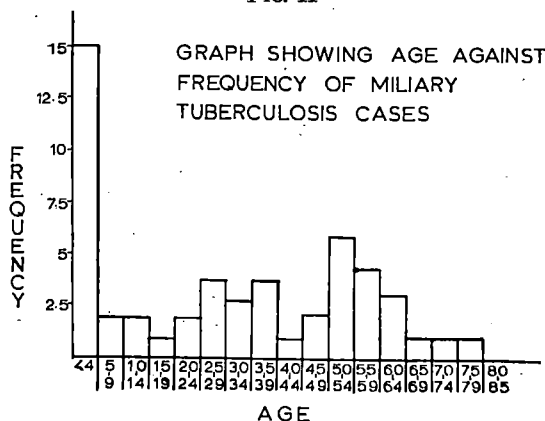
Autopsy	36
Liver biopsy only	4
Lymph node biopsy only	3
Lymph node and liver biopsy	1
Sputum	3
Gastric lavage	2
Lung puncture	2

There has been an error in classification in the cases where tubercle bacilli were recovered on sputum and gastric lavage.

Miliary tuberculosis may be difficult to diagnose. The diagnosis is most frequently made radiologically but sometimes there is no lung mottling until late in the disease. The condition frequently presents with a pyrexia of unknown origin with perhaps some enlargement of the liver and spleen, a pancytopenia or a leukaemoid blood picture. (Cooper, 1959).

Unless there is a conveniently sited lymph node available for biopsy the diagnosis can be established by liver biopsy or a therapeutic test. This test is made with streptomycin, P.A.S. and I.N.A.H. This should cause a substantial recession of the temperature to normal within 14 days of treatment.

FIG. II



The age distribution is shown on a chart (Fig. 2). The main frequency is in the first five years of life, followed by a slight rise in young and middle adult life and again by a greater rise in the sixth and seventh decade. This follows the universal pattern. (Crofton and Douglas, 1969).

FIG. III

SHOWING ORGANS AFFECTED IN 42 CASES OF MILIARY TUBERCULOSIS.

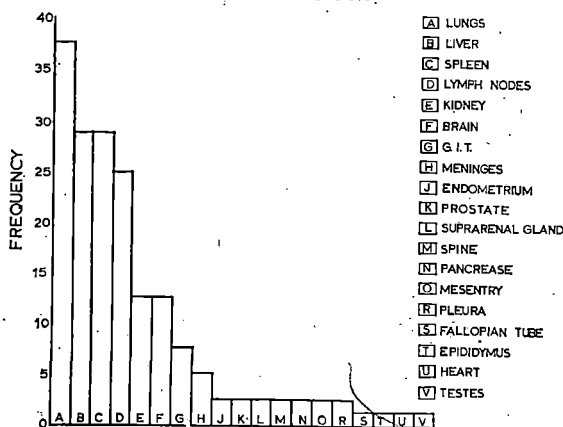


Figure 3 shows the distribution found at autopsy in 42 cases. In 36 cases it was the lungs, in 29 the liver and in 29 the spleen; lymph nodes in 25, kidney in 12, brain in 12, intestines in 7 and meninges in 5. Endometrium, mesentery, pleura, prostate, pancreas, suprarenals and spine all appeared twice and the epididymus, fallopian tube, heart and testes once.

#### TUBERCULOSIS OF BONES AND JOINTS

165 cases were classified.

39 cases were proven.

9 cases were probable.

There were nine deaths and five came to autopsy when the disease was proven. The infected sites were in the spine, femur, knee, hip, ankle, elbow and fingers.

Table V

*Category of 165 Cases classified as having Tuberculosis of the Bones.*

Bones/Joints	Classified	Proven	Prob- able	Un- proven	Deaths
Femur	3	3	—	—	—
Ribs	2	1	—	1	—
Radius	1	—	—	1	—
Tarsus	2	—	—	2	—
Knee	10*	5	—	5*	—
Vertebrae	119	24	8	87	—
Hip	20*1	2	1	17*1	—
Ankle	61	2	—	41	—
Elbow	2	1	—	1	—
Dactylia	2	1	—	1	—

\* This case had both a tuberculosis knee and hip

1 This case had tuberculosis of both ankle and hip.

Davies (1947) reported that in Uganda surgical tuberculosis was rarely encountered and this would seem to be so in this country. The femur, ribs and knee were uncommonly attacked. The bones most likely to suffer in tuberculosis are the vertebrae.

#### TUBERCULOUS EFFUSION AND EMPYEMA

There were 58 classified cases; 22 were proven and one was probable; 12 of the cases had the disease elsewhere (i.e. lungs, glands, etc). The remaining 10 were proven by autopsy in 3 and pleural biopsy in 7 cases.

There were 13 cases of primary pleural effusion and were accepted as tuberculosis by virtue of there being no evidence of other disease.

What is noteworthy here is the small number of positive pleural biopsies. This procedure is said to give a positive result in 80 per cent. of cases. (Crofton & Douglas, 1969).

#### TUBERCULOSIS OF THE PERICARDIUM

Davies (1947) found that tuberculous pericarditis was a common finding at autopsy and he also records the occasional case seen at autopsy of a myocardial tuberculosis. The absolute proof of this condition is difficult. Pericardial biopsy is relatively safe, but most, if not nearly all, patients are reluctant to have a biopsy entailing an incision in or near the heart. Therefore the clinician must resort to confirming his diagnosis on the basis of an exudate, a suggestive history and response to chemotherapy. However, at times, there is involvement of the supraclavicular glands. In this series, 30 cases were classified, only 5 were proven — all 5 by gland biopsy.

Table VI

<i>Category of 30 cases classified as Tuberculosis of the Pericardium</i>	
Classified	30
Proven	5 (16.6%)
Unproven	25 (83.5%)

Here an unsatisfactory state of affairs is revealed for the proof that the pericardium is the seat of a tuberculous infection is rarely established during life and in most cases the cause is presumptive.

#### TUBERCULOSIS OF THE BRAIN AND MENINGES

Tuberculosis of the brain and meninges arise from an infection initially in the lungs, lymph glands or other common sites of infection. The lesion may remain silent in the brain, or cause focal symptoms and signs such as epilepsy, headache or paralysis. The lesion may then spread into the meninges, thus causing a meningitis. On the other hand, there may be at first a transient meningeal reaction which is quite nonspecific such as a rise in protein and cells. This could be followed sooner or later by tuberculous meningitis. Without resort to craniotomy, the diagnosis of a tuberculoma in the brain is in most cases impossible, and can only be suspected, although the suspicion may be strengthened by a positive tuberculin reaction, a raised erythrocyte sedimentation rate or a tuberculous focus elsewhere in the body.

Furthermore, especially in the case of the transient meningeal reaction the position is bedevilled by any previous use of antibiotics when the patient first reports to his doctor. Here one is faced with the problem as to whether the patient is suffering from a partially treated pyogenic meningitis or a viral meningo-encephalitis, but the fear of tuberculosis is always at the back of one's mind.

During the period under review and shortly before it, we can think of three such cases. In the first instance a male was treated for tuberculous meningitis; his recovery seemed to be too quick to sustain the diagnosis and he was discharged; two weeks later he presented with all the typical features of tuberculous meningitis.

The second and third cases involved epilepsy. In one a patient with epilepsy was investigated. Several years later he developed physical signs and on craniotomy by Prof. L. Levy, (who incidentally was intimately involved in all three cases) a tuberculoma in the cerebellum was found. The other case was a young registered nurse who pre-

sented with epilepsy; she too was thoroughly investigated and was under continuous observation. Three weeks prior to her death her cerebrospinal fluid was normal in every respect and then she was admitted with all the features of meningitis. At autopsy she was found to have miliary tuberculosis as well as tuberculous meningitis.

#### TUBERCULOSIS OF THE BRAIN

Six cases were classified; five of them being proven after craniotomy. In this series there were no deaths; one case was in the cerebellum, the other four were in the cerebral hemispheres and the base of the brain. The unproven case was a patient who presented with fits, his cerebrospinal fluid was normal. He was discharged and there is no evidence to follow up.

#### TUBERCULOUS MENINGITIS

There were 73 classified cases; 14 were proven and one was probable. Eleven died in hospital, autopsies were obtained in eight. The remaining six proven cases were confirmed as follows:

Three with acid fast bacilli in the cerebrospinal fluid on direct smear.

One by culture of cerebrospinal fluid.

One by acid fast bacilli from a swab taken from a discharging ear.

One by the presence of bacilli in a pelvic abscess.

Thus 79.4 per cent. of cases classified as tuberculous meningitis were unproven. This is an unsatisfactory record when the presence of acid fast bacilli could be proved in more cases.

On the other hand, it would be unwise to withhold treatment in cases where tuberculous meningitis is suspected but not proven, particularly when the cerebrospinal fluid is suggestive, provided other conditions such as cryptococcal meningitis can be excluded.

#### TUBERCULOSIS OF THE ALIMENTARY SYSTEM

##### *Tuberculous peritonitis.*

Forty-two cases were classified as having tuberculous peritonitis, 12 were proven. There were three deaths and the diagnosis was confirmed at autopsy.

Table VII

Category of 42 Cases classified as Tuberculous Peritonitis.

Classified	42
Proven	10 (23.8%)
Assumed	2 (4.8%)
Unproven	30 (71.4%)

An interesting feature was the sex ratio; nine out of the 12 proven cases were female. This is a universal finding. The high percentage of unproven cases is not satisfactory. Usually the patients present with abdominal pain with or without swelling of the abdomen. If there is ascites, as there frequently is, the inflammatory nature of the fluid should alert the clinician to the possibility of tuberculosis. The diagnosis can be proven by a search for bacteria on direct smear or by culture. If a fair quantity of fluid is sent, say 1.5 litres, the chances of obtaining a positive culture is high. The diagnosis can be expedited by peritonoscopy or laparotomy. Ascites is common in Central Africa and usually caused by portal hypertension associated with cirrhosis of the liver or congestive cardiac failure. Sometimes ascites can become infected showing the characteristics of a chronic peritonitis. This is acceptable in males but in females in the child bearing group ascites due to portal hypertension is not very common. It is suggested that if by diagnostic aspiration an exudate is obtained the patient should be subjected to peritonoscopy or laparotomy.

#### TUBERCULOSIS OF THE ALIMENTARY TRACT

There were 22 classified cases; 9 were proven. The sites were:

- 2 Oesophagus
- 5 Ileum and small intestine
- 2 Fistula
- 1 proven by autopsy
- 1 was assumed
- 1 was assumed
- 3 proven by biopsy
- 2 proven by biopsy

#### TUBERCULOSIS OF THE FEMALE GENITAL TRACT

This condition is still not uncommon in Africa. Nineteen cases were classified; 12 were proven and 7 were unproven; 9 had the disease in the endometrium, 2 in the Fallopian tubes and one case was shown to have the disease in the tube and in the endometrium. Death occurred in one case, but unfortunately an autopsy was not obtained. This aspect of tuberculosis warrants further study and investigation.

#### TUBERCULOSIS OF THE MALE GENITALIA

Twelve cases were classified under this heading of which eight were proven. One case was classified as tuberculosis. Six cases were found in the

epididymus. One case had the disease in the prostate gland associated with pulmonary tuberculosis and another had the disease in the epididymus and testicles.

This is less commonly seen in Africans than in Europeans.

#### TUBERCULOSIS OF THE URINARY SYSTEM

The noteworthy feature is the infrequency of tuberculosis of the renal tract in the African. Ten cases were classified of which five proven and one case was probable. The distribution was as follows:

Whole renal system	1
Kidney only	2
Kidney and ureter	1
Bladder	1

One case died and tuberculosis of the urinary system was confirmed at autopsy. It would seem that renal tuberculosis is an accepted rarity in the African and the recent occurrence of a case in East Africa confirms how exceptional it is. (Bwibo, 1970).

#### TUBERCULOUS ABSCESSES

This is a special group where there were 6 cases that were classified under sepsis. They all had abscesses in the pelvis; 4 were proven to be tuberculous.

- 2 pelvic abscesses
- 2 peritoneal abscesses
- 2 unproven cases had groin abscesses.

#### TUBERCULOSIS OF THE PHARYNX LARYNX AND PALATE

All 5 classified cases were proven. All were associated with tuberculous lesions elsewhere. The association of a tuberculous lesion in the larynx, tonsil and pharynx with that in the lung is well known. In any case of chronic laryngitis or pharyngitis an X-ray of the chest must be taken. The proven sites were as follows:

Pharynx	2
Larynx	1 (Pulmonary tuberculosis)
Epiglottis	1
Palate	1 (Pulmonary tuberculosis)

None of these cases died.

#### TUBERCULOSIS OF THE EAR

Ten cases were classified but only two were proven; one of these cases occurred in association with tuberculosis meningitis.

#### TUBERCULOSIS OF THE BREAST TISSUE

There were three classified cases; all cases were proven and in each case there was evidence of tuberculosis elsewhere. The associated sites were the lungs, axillary lymph nodes and the spine.

#### LUPUS VULGARIS

This was surprisingly uncommon. Only 5 cases were classified, of which one was proven.

A single proven case of tuberculoma of the spleen was reported, here there was also a tuberculous lesion in the lungs.

There were single cases of the eye and nasal cavity but neither was proven.

#### TUBERCULOSIS IN ASSOCIATION WITH PROTEIN MALNUTRITION

##### (Kwashiorkor)

Although protein calorie malnutrition may be followed by tuberculosis our figures are surprisingly low, but probably the signs of kwashiorkor were not specifically sought or recorded. There were eight cases in which protein calorie malnutrition was recorded. Six of the eight cases were five years or under. Three had pulmonary tuberculosis, two military tuberculosis and one lymphadenitis, otitis media and peritonitis respectively. All were male and all were under the age of 13 years.

#### SITES OF INFECTION

The information submitted confirms the protean manifestations of tuberculosis and the many organs involved. For instance, tuberculosis of the lungs was associated with the involvement of lymph nodes, pleura, peritoneum, palate, small intestine, meninges, spine, genital system, urinary system, liver and spleen. An interesting finding was the infrequency with which joint involvement was found with disease of the lungs.

An accessible lymph node is an invaluable aid to diagnosis. Firstly this is so in tuberculous lymphadenopathy and again in pulmonary tuberculosis, pericarditis, pleura, epididymus, femur, hip, elbow, bladder, meninges and breast and female genitalia. This feature is infrequently encountered in the Caucasian.

In 65 proven cases it occurred in more than one site. The combinations were as follows:

Table VIII

*Combinations of Organs affected by Tuberculosis.*

Lungs with:

Lymph nodes	11
Pleura	7
Pleura nodes and pleura	4
Lymph nodes and peritoneum	2
Lymph nodes, pleura & peritoneum	1
Lymph nodes and palate	1
Lymph nodes and ileum	1
Meninges	2
Spine	1
Testicle	2
Spine and brain	1
Spine, renal system, epididymus	1
Pleura, peritoneum, pericarditis	1
Groin abscess	1
Larynx	1
Breast	1
Spleen	1
Total	39

Lymph Nodes associated with involvement of:

Lungs	11
Lungs and pleura	4
Lungs and peritoneum	2
Lungs, pleura and peritoneum	1
Lungs and palate	1
Lungs and ileum	1
Pericardium	4
Pleura	2
Epididymus	2
Femur	1
Hip joint	1
Elbow joint	1
Oesophagus	1
Ileum	1
Bladder	1
Meninges	1
Breast	1
Total	36

Miliary with:

Pleura	1
Total	1

Pleura with:

Lungs	6
Lungs, lymph nodes	4
Lungs, lymph nodes and pericardium	1
Lungs, peritoneum, pericardium	1

Lymph nodes	2
Peritoneum	1
Oesophagus	1
Total	16

Spine with:

Lungs	1
Lungs, brain	1
Lungs, renal system, epididymus	1
Meninges	1
Breast	1
Total	5

Bones and Joints with:

Lymph nodes	3
Total	3

Meninges with:

Kidney	1
Pelvic abscess	1
Lungs	2
Lymph nodes	1
Ear	1
Spine	1
Total	7

Brain with:

Lungs and spine	1
Total	1

Peritoneum with:

Lungs and lymph nodes	2
Lungs, lymph nodes, pleura	1
Lungs, pleura, pericardium	1
Endometrium	1
Pleura	1
Total	6

Gastro-intestinal Tract with:

Lung and lymph nodes	1
Lymph nodes	2
Pleura	1
Total	4

Female Genitalia with:

Peritoneum	1
Total	1



## Male Genitalia with:

Lungs	2
Lymph nodes	2
Lungs, renal system, spine	1
Total	5

## Abscesses with:

Lungs	1
Meninges	1
Total	2

## Pericardium with:

Lymph nodes	4
Lungs, pleura and peritonitis	1
Total	5

## Renal System with:

Lungs, spine and epididymus	1
Lymph nodes	1
Meninges	1
Total	3

## Breast with :

Lungs	1
Lymph nodes	1
Spine	1
Total	3

## Ear with:

Meninges	1
Total	1

## Palate with:

Lungs and lymph nodes	1
Total	1

## Larynx with:

Lungs	1
Total	1

## Spleen with:

Lungs	1
Total	1

## TUBERCULOSIS IN CHILDHOOD

Tuberculosis in children under the age of 14 years was recognised in 88 cases; 19 were miliary (third only to pulmonary tuberculosis), 22 pulmonary and 20 had lymphadenitis. Four out of the five cases of pericarditis belonged to this age group. The distribution was as follows:

Table IX

*Sites of Tuberculosis in 88 Children.*

Pulmonary	22
Lymphadenitis	20
Miliary	19
Bones and joints	5
Meningitis	4
Pericarditis	4
Spine	3
Gastro intestinal tract	3
Pleural effusion	2
Otitis media	2
Epididymus	1
Brain	1
Total	88

Furthermore there were 31 accepted cases of pulmonary tuberculosis; both cases of tuberculous otitis media fell into this age group.

## DISCUSSION

This study shows that tuberculosis is still an important disease in general hospital practice in Central Africa. It accounted for two per cent. of our total admissions. This is by no means a reflection of the incidence of the disease in Rhodesia, because as previously stated many cases are diverted directly to the specialised tuberculosis hospitals before admission to Harare Hospital.

This study too, shows that the definitive diagnosis of tuberculosis was made in 38 per cent of cases. This is understandable for in certain sites of the disease, for instance, tuberculosis of the central nervous system, treatment was instituted where the clinical and laboratory findings were suggestive. Improvement in diagnosis is possible, particularly in the cases of tuberculous peritonitis. It must be reiterated here that a conveniently sited lymph node is an invaluable aid to diagnosis.

We tried to compare the incidence of tuberculosis with other hospitals of this type in Africa. A fair and strict comparison was not possible. There were many variables amongst these criteria for diagnosis. Most reports come

from specialised hospitals. These findings give no indication of the extent of the non-pulmonary forms.

In attempting a comparison the following table may be of interest:

Table X

*Frequency of Pulmonary and Extrapulmonary Tuberculosis in different African Hospitals.*

Country	Pulmonary	Extra-pulmonary
Kenya (Nairobi)	92,3	7,8
Liberia (Mauronia)	92,0	8,0
Uganda (Mulago)	83,4	16,6
Rhodesia (Harare)	49,0	51,0
Zambia (Belovale)	41,0	59,0

It must be emphasised again that there is a loading against pulmonary tuberculosis at Harare because of the diversion to specialised hospitals of open cases. The sex incidence is comparable to other centres, 3:2 being in favour of the males. Nevertheless a few valuable autopsy studies were recorded in East Africa which is worth referring to.

Vint (1936) in East Africa carried out an autopsy study on tuberculosis among Africans in Nairobi. In 1 000 autopsies tuberculosis was found in 132, the organs being affected mostly and often in combination with the lungs (94 per cent.), liver (82 per cent.), spleen (43 per cent.), intestinal and mesenteric gland (42 per cent.), kidneys (30 per cent.), cerebral and meningeal (29 per cent.), heart (12 per cent.) and bones and joints (2 per cent.); 67 out of the 132 cases had miliary tuberculosis.

Davies (1947) reported that tuberculous disease was found in 354 out of 2 994 autopsies (11,8 per cent), 297 (86,8 per cent.) being pulmonary and 57 (13,2 per cent.) were non-pulmonary. Most of the non-pulmonary cases were glandular. This finding was noted by Davies (1947) — in 297 autopsy cases with pulmonary tuberculosis 38 also had glandular lesions.

The ratio of male to female patients was 3:2. The sex ratio of all admissions to Harare Hospital during the period under review, males to females was 1,25:1,00.

There were some exceptions to the predominance of males;

Peritonitis — 1 male to 3 females;

Tuberculosis of the urinary system — 4 males to 1 female;

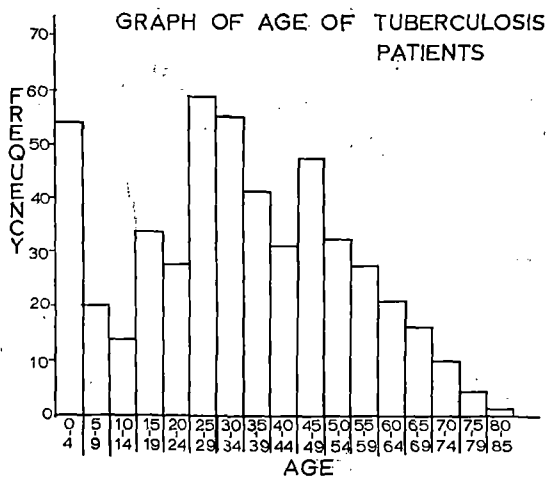
Tuberculosis of the spine — 3 males to 1 female;

Tuberculosis of the genital system — 2 males to 3 females.

The nature of the patient's occupation was recorded in only 196 cases. No meaningful information could be deduced from them. The great majority, where this information was available, were labourers, probably a reflection of the general distribution of this occupation amongst Rhodesian Africans. There were only three recorded at the time of admission as being employed in the mining industry.

In common with the rest of Africa, tuberculosis of the renal system is extremely rare. Another rare site for tuberculosis was the adrenal gland and the first two cases in Rhodesia, apart from its association with miliary tuberculosis were only recently recorded. (Taubé and Buchanan, 1970).

FIG. IV



The age distribution can be seen in Figure 4. Here two major peaks can be discerned. The first, between one month to four years; a second at 25-49 years. Comparing it with Kenya (Davies 1947) we see two peaks as well, the first in the under 55 and the second between 15 and 34. In Rhodesia the disease is found in the elderly which is in keeping with experience in Western Europe (Crofton and Douglas, 1969), where in the last two decades there has been an increasing incidence in the elderly.

We cannot accurately assess the place of domicile and infection in our cases because of the insufficient data at our disposal; we can but guess that the incidence in rural and urban areas is about the same.

We have not established the frequency of bovine tuberculosis in our cases. Its incidence in cattle slaughtered in 1969 was 1 in 3 408 (0,002 per cent.), (Dr. Thornton — personal commun-

cation). Tuberculosis in cattle is of the bovine type; in some routine cultures only one was suspected as a human bacillus. It must be pointed out that these figures are obtained from authorised abattoirs and do not reflect the incidence in the tribal areas where no inspections take place. However, the low incidence in Rhodesian cattle suggests that the great majority of infections in humans must be the human type.

### SUMMARY

We established in this study that tuberculosis of the lungs, lymph nodes and the miliary form are the commonest types of the disease seen at Harare Hospital, accounting for 69.2 per cent. of the total proven cases.

Pulmonary tuberculosis was sometimes diagnosed by X-ray where proof was lacking. Ten per cent. of the cases were found to be associated with tuberculous lymphadenitis.

Tuberculosis of the lymph nodes was the form most easily diagnosed, because the lymph nodes are so readily biopsied. The lung, liver, spleen and lymph nodes were the organs most frequently involved in acute miliary tuberculosis. It was found to be most common in the 0-4 years age group, but more cases were seen in adults than in children under 15 years of age.

Tuberculosis of the bone and joints was often diagnosed, but few cases were proven. Tuberculosis of the vertebrae was most frequently seen.

Tuberculous disease of the pericardium and pleura were not rare, but the definitive diagnosis was difficult. Diagnosis was often established by the presence of the disease in a lymph node or some other organ. The diagnosis of a pulmonary lesion is not infrequently established after biopsy of an enlarged lymph node. It was found difficult to establish the diagnosis in tuberculosis of the peritoneum.

Tuberculosis of the gastrointestinal tract was not uncommon even though bovine tuberculosis appears to be rare. It therefore seems as if the human bacillus is responsible for most cases in Rhodesia.

Tuberculosis of the suprarenal glands, skin and the genito-urinary tract is found rarely as compared with Europe.

Unusual sites for the disease included the breast and abscesses in the pelvis. The disease was seen in all ages with two major peaks in infants and young adults but it was most uncommon in the elderly.

Tuberculosis in children was fairly common, again showing a predominance for pulmonary tuberculosis, tuberculous lymphadenitis and miliary tuberculosis. Kwashiorkor in children was seen on several occasions in conjunction with tuberculosis.

### REFERENCES

- BWIBO, W. O. (1970) *Trop. Geog. Med.* 22, 377.  
 COOPER, W. (1959) *Ann. Int. Med.* 50, 1497.  
 CROFTON, J. AND DOUGLAS, A. (1969) Blackwell Scientific Publishers. Oxford. p. 168.  
 DAVIES, J. N. P. (1947) *East Afr. Med. J.* 24, 352.  
 GELFAND, M. (1962) *Cent. Afr. J. Med.* 8, 342.  
 MEYER, P. (1951) *West Afr. Med. J.* 3, 89.  
 TAUBE, E. AND BUCHANAN, W. (1970) *Cent. Afr. J. Med.* 16, 101.  
 VINT, F. W. (1936) *East Afr. Med. J.* 13, 332.

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